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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/562,937

12/30/2005

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47121-5016

8572

55694 7590 10/29/2008  
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EXAMINER

KONG, SZE-HON

ART UNIT

PAPER NUMBER

3661

MAIL DATE

DELIVERY MODE

10/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/562,937	<b>Applicant(s)</b> MAKELA ET AL.	
	<b>Examiner</b> SZE-HON KONG	<b>Art Unit</b> 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/21/2006</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 7/21/2008 was filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Specification***

3. The disclosure is objected to because of the following informalities:

The term "travelled" (paragraph 0009, line 3, paragraph 0019, line 3, 5, 11 and paragraph 0026, line 33) should read "traveled".

The reference number "12" (paragraph 0019, line 4), should be removed because the same reference number is for "second control unit".

Appropriate correction is required.

### ***Claim Objections***

4. Claims 2, 7 and 9 are objected to because of the following informalities:

The term "travelled" (claims 2 and 9, line 3) should read "traveled".

The term "portion" (claim 7, line 16 and 18) should read "section" in comply with antecedent basis.

The character ',' is missing after '7' (claim 9, line 1).

The term “direction” (claim 9, line 3) should read “direction of the mining vehicle” to clearly note the relation of a direction.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: “determining data” (claim 1, line 3), “forming” (claim 1, line 9 and claim 4, lines 3-4), “employing” (claim 1, line 6), “creating” (claim 1, line 11 and claim 7, line 8) and “arranging/arranged” (claim 1, line 16, claim 7, line 17, 20 and 22 and claim 11, line 3).

It is unclear and not defined the steps to determine the data on the location of a vehicle, form the mine section, employing the data in the system and create a wireless network. It also omits the steps to arrange the base station, the location of the mining vehicle and arrange the positioning to be performed.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1, 2, 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakkinen (6,616,244) and Breakfield et al. (6,859,729).

For claims 1, 4, 7, 8 and 11, Hakkinen discloses a mine control system for monitoring and determining the location of a mining vehicle in a mine (Abstract), where the mining gallery includes number of sections (Fig. 1); wireless data transmission for connecting between the control room and the mining vehicles and control information is transmitted from the control room to the mining vehicles (Col. 3, lines 20-33); the mine vehicle comprises an inertial measuring device and ultrasonic scanners and transmit the measured information for creating a map of the mine (Col. 3, lines 34-54).

Hakkinen disclose arranging markers in the mine for location determination and establish data communication between the mining vehicle and the wireless network (Col. 3, lines 24-50) but does not disclose the coverage area of a base station in the first mine section; arranging at least one base station in the second mine section for establishing a data communication connection between the mining vehicle and the wireless network; determining the location of the mining vehicle in the first mine section by means of positioning performed in the wireless network. Breakfield discloses number of physical waypoint markers locate along a path for relaying position information to vehicles with wireless communication technique including radio transmission (Fig. 2 and Col. 5, lines 41-67). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Hakkinen to arrange base stations for establishing wireless data communication between the mining vehicle and the network, taught by Breakfield to improve the determination of the location of the

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mine vehicle.

For claims 2 and 9, Hakkinen discloses an inertial measuring device produces continuous location information of the position of the measuring vehicle in the mine and measuring devices, for example, ultrasonic scanners. It is well known in the art that common inertial measuring devices, for example, gyroscopes and accelerometers determine travel direction (Col. 4, lines 34-50).

Hakkinen does not specifically disclose calculating the distance traveled for the vehicle but it would have been obvious for one of ordinary skill in the art at the time the invention was made that the markings on the walls of the mine as discloses represent location and positioning of the vehicle, can also represent the distance traveled by the vehicle. Breakfield discloses laser tracking system for accurate distance measurement, compass navigation and/or wheel encoders for supplying angular information and combination of the navigation devices for distance and angular control (Col. 4, lines 45-65). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Hakkinen to calculate the distance traveled by the vehicle, taught by Breakfield to accurately determine the location of the vehicle.

For claim 5, Hakkinen discloses the inertial measuring device produces continuous location information on the position of the vehicle (Col. 4, lines 34-50).

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Hakkinen does not disclose comparing the location determined by the measuring device with the location determined by the wireless network when in the first mine section, and updating the location of the mining vehicle to correspond to the location determined by the wireless network. Breakfield discloses correcting the error of the position of the vehicle by base station with known position for absolute accuracy using differential GPS when available (Col. 7, lines 23-56). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Hakkinen to correct the positioning error of the vehicle by the base station, taught by Breakfield to improve the accuracy of positioning the vehicle.

For claims 6 and 10, Hakkinen discloses marking additional control marks in the mine for position determination and marking critical locations in the mine, for example drilling location and drill holes to be charged. Col. 4, lines 40-50, discloses updating the control system of the mine with the new section formed (Col. 3, lines 46-54).

Hakkinen does not disclose placing additional base stations belonging to the wireless network. Breakfield discloses base stations wireless network (Fig. 2). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Hakkinen to replace the marks with additional base stations, taught by Breakfield to expand coverage and improve positioning accuracy at desire locations.

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9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hakkinen (6,616,244) and Breakfield et al. (6,859,729) and further in view of Kageyama (6,480,769).

For claim 3, Hakkinen discloses an operator receive information regarding the picture and location of the position of the mining vehicle (Col. 3, line 65 – col. 4, line 7 and col. 4, lines 62-67 and col. 5, lines 20-24).

Hakkinen does not specifically disclose a manned mining vehicle, but it would have been obvious for one of ordinary skill in the art at the time the invention was made that the unmanned vehicle can be replaced by a manned vehicle where the operator can control the mine vehicle manually. Kageyama discloses monitoring the location of a manned mining vehicle in the mine and transmitting instructions to the operator of the mining vehicle (Fig. 2 and col. 7, lines 25-53).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SZE-HON KONG whose telephone number is (571)270-1503. The examiner can normally be reached on 7:30AM-5PM Mon-Fri, Alt. Fri. Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10/17/2008

/SZE-HON KONG/

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Examiner, Art Unit 3661

/Thomas G. Black/  
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